What Is DOCSIS 4.0 (And When Will It Be Available?)

Today isn't the day you upgrade to a new DOCSIS 4.0 modem, but it'll be here sooner than you realize.

BY JASON FITZPATRICK PUBLISHED MAY 9, 2023

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DOCSIS 4.0 is the latest iteration of the DOCSIS cable modem standard and will be rolling out to limited markets as early as late 2023.

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Do you have a cable modem? It's using DOCSIS. If you're curious when you'll have faster cable internet thanks to DOCSIS 4.0---and when you'll need to upgrade your cable modem---here's what to expect and when.

What Is DOCSIS?

DOCSIS stands for Data Over Cable Service Interface Specification. It's a standard created by the non-profit cable research consortium CableLabs in the 1990s to help unify the then-very-fragmented early cable internet service provider market. Before the CableLabs initiative and the adoption of DOCSIS standards, cable modems used by cable providers were not interoperable.

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The early DOCSIS versions---DOCSIS 1.0, 1.1, and 2.0---had a basic two-channel design with one channel dedicated to the download and one to the upload. This limited early cable modems to a theoretical maximum of 40 Mbps down and 30 Mbps up.

The introduction of DOCSIS 3.0 in 2006 ushered in channel bonding, which allowed the modem to combine multiple channels for theoretical speeds of up to 1 Gbps down and 200 Mbps up. The minimum channel configuration under DOCSIS 3.0 is 4 channels down and 4 channels up (4x4), but you can buy modems up to 32x8. DOCSIS 3.0 can support up to near-gigabit speeds, and a DOCSIS 3.0 32x8 modem is sufficient for cable internet packages up to around 800 Mbps.

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DOCSIS 3.1, introduced in 2013, made the minimum default configuration 32x8 channels. Further, it brought changes to the channel width, numerous optimizations, and as a result, support for gigabit and multi-gigabit internet. DOCSIS 3.1 has a theoretical maximum speed of 10 Gbps down and 1.5 Gbps up. DOCSIS 3.1 modems are only required for cable internet subscribers with

internet packages near or above gigabit speeds, though DOCSIS 3.0 modems are slowly being phased out.

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DOCSIS 4.0 vs. DOCSIS 3.1: What's the Difference?

The DOCSIS progression doesn't end at DOCSIS 3.1. The next iteration of DOCSIS is 4.0, previously called DOCSIS 3.1 Full Duplex was announced in 2017, and research, development, and deployment have been underway since. The original name of the new standard hints at one of the key differences between the 3.1 and 4.0 versions

Every prior version of DOCSIS has had asymmetrical upload and download, a limitation imposed by the separate upload/download channel scheme. Because most people value download speed over upload speed, cable companies have long opted to reserve the best channels for download and stuff the upload capacity into the less optimum channels. Channel bonding and adjusting those channels helped boost upload speed over the years, but DOCSIS 3.1 still has a roughly 10:1 disparity between download and upload capacity.

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DOCSIS 4.0 takes the improvements of DOCSIS 3.1 and adds full-duplex communication over the existing 32x8 channel configuration. It retains the 10 Gbps theoretical maximum download speed but boosts the upload speed to 6 Gbps.

While that's not 1:1 parity at the 10 Gbps level, it does allow for cable providers to offer symmetric cable packages to compete with the variety of fiber packages on the market, like the 1 Gbps, 2 Gbps, and 5 Gbps packages offered by AT&T, Verizon, and so on.

When Will DOCSIS 4.0 Be Available?

As of early 2023, there are no public rollouts of DOCSIS 4.0---even if you live in a high-density urban environment, you can't pop into your local cable provider and upgrade to DOCSIS 4.0.

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That said, various providers are actively running limited real-world tests around North America. Rogers Communications in Canada is in limited field trials, and it plans to activate DOCSIS 4.0 on its network by the end of 2025. At the end of 2022, Comcast completed a successful field trial of DOCSIS 4.0 in Philadelphia and continues to conduct testing, with a projected partial market rollout by the end of 2023 and widespread rollout in 2025.

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Most likely, the rollout will start in metropolitan areas already prepped for field tests, followed by metropolitan areas dense enough to support the expense and behind-the-scenes updating required for the extra frequency utilization and full-duplex DOCSIS 4.0 delivery. If you're lucky, you might be eligible as early as the end of 2023, but most North American cable internet subscribers won't see DOCSIS 4.0 availability until 2025 and beyond.

DOCSIS 4.0 Frequently Asked Questions

In addition to curiosity about when DOCSIS 4.0 availability, there are quite a few practical ground-level questions and concerns people have about DOCSIS 4.0 rollout.

Is DOCSIS 4.0 a Fiber Internet Replacement or Alternative?

If you're lucky enough to have fiber in your neighborhood, DOCSIS 4.0 doesn't pose much threat to your fiber-based ISP's business model unless cable companies come out swinging with highly competitive pricing.

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But for people outside of fiber-rollout zones (which is, sadly, still the bulk of internet subscribers), final-mile cable delivery of 1 Gbps-and-up symmetrical internet is a huge deal. The DOCSIS 4.0 update positions cable internet providers to offer fiber-like speeds over existing infrastructure. For millions of subscribers, sitting around waiting for fiber to show up in the future will be replaced with enjoying fiber-like speed over cable in the present.

Will I Need a New Cable Modem?

You will need a new cable modem when DOCSIS 4.0 rolls out, just like current cable subscribers who want gigabit packages have to upgrade from DOCSIS 3.0 to DOCSIS 3.1 modems.

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The majority of North American cable internet subscribers are on sub-gigabit subscriptions right now, however, so until we reach a point where cable companies are simply not supporting and provisioning older 3.0 and 3.1 modems, there will likely be zero pressure for consumers to upgrade.

Eventually, everyone will be using DOCSIS 4.0 modems as, regardless of subscription speed, it becomes the only version supported in the same way that nobody uses DOCSIS 1.0 or 2.0 modems anymore.

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Are DOCSIS 4.0 Cable Modems Backward Compatible?

DOCSIS 4.0 modems will be backward compatible with DOCSIS 3.1, retaining the trend of backward compatibility. Because 4.0 modems build on the significant channel utilization improvements in 3.1, they will not be backward compatible with 3.0 networks.

Just like people bought DOCSIS 3.1 modems to "future-proof" even while their provider was still using DOCSIS 3.0, you'll be able to buy a DOCSIS 4.0 modem and enjoy backward compatibility even if your cable provider is still rolling out DOCSIS 4.0.

How Much Will DOCSIS 4.0 Modems Cost?

As of early 2023, there are no off-the-shelf DOCSIS 4.0 modems for sale, but we can fairly easily extrapolate current price models to predict how much you'll pay for one when the DOCSIS 4.0 rollout arrives.

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Many consumers will simply get upgrades through their cable provider's equipment rental program, continuing to pay $10-15 a month for their shiny new 4.0 modem.

For people who prefer to take an upfront cost hit to defer future rental fee expenses, however, early DOCSIS 4.0 modems will likely have a price point similar to the early DOCSIS 3.1 modems. You should expect to pay around $150-200 for the first 4.0 modems to market, with prices falling

over time, similar to DOCSIS 3.1 modems. After a year or two, there will likely still be premium $150 options, but plenty of more affordable options on the market.

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Will The Cable Company Have to Dig Up My Yard?

Unless you're activating your cable internet at a property that hasn't had any infrastructure updates in decades and the wiring is damaged or corroded, there's no need for any significant updates.

DOCSIS 4.0 will be delivered over the same final-mile CATV infrastructure that supports DOCSIS 3.0 and DOCSIS 3.1. On the cable company's side of things, there are ongoing extensive upgrades to support neighborhoods with hundreds of subscribers all on multi-gigabit, but no need to trench your yard or run new lines off the pole for your connection.

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On a minor and less intrusive level, though, you may find yourself making a service call at the beginning of your DOCSIS 4.0 adoption journey. Small issues like corrosion on old connectors, old RF splitters that didn't introduce enough signal strength drop or interference to disrupt your old modem (but do mess with your new modem), and other issues may crop up.

When you switch to a newer system with higher bandwidth demands, expanded frequency utilization, and all-around tighter "tolerances," if you will, you might find you need to have an old cable line re-terminated, the cable demarcation box on the outside of your home inspected, and so on. But if you're currently running a DOCSIS 3.0 or 3.1 modem, there's no major infrastructure overhaul required between the pole and your home.

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About The Author

Jason Fitzpatrick • Editor-In-Chief

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Jason Fitzpatrick is the Editor-in-Chief of How-To Geek. He oversees the day-to-day operations of the site to ensure readers have the most up-to-date information on everything from operating systems to gadgets.

Prior to his current role, Jason spent several years as Editor-in-Chief of LifeSavvy, How-To Geek's sister site focused on tips, tricks, and advice on everything from kitchen gadgets to home improvement. Prior to that, he was the Founding Editor of Review Geek. Jason has over a decade of experience in publishing and has penned thousands of articles during his time at LifeSavvy, Review Geek, How-To Geek, and Lifehacker.

He's been in love with technology since his earliest memories of writing simple computer programs with his grandfather, but his tech writing career took shape back in 2007 when he joined the Lifehacker team as their very first intern. After cutting his teeth on tech writing at Lifehacker and working his way up, he left as Weekend Editor and transferred over to How-To Geek in 2010.

With years of awesome fun, writing, and hardware-modding antics at How-To Geek under his belt, Jason helped launch How-To Geek's sister site Review Geek in 2017. In 2019, he stepped back from his role at Review Geek to focus all his energy on LifeSavvy. In 2022, he returned to How-To Geek to focus on one of his biggest tech passions: smart home and home automation. In 2023, he assumed the role of Editor-in-Chief.

In addition to the long run as a tech writer and editor, Jason spent over a decade as a college instructor doing his best to teach a generation of English students that there's more to success than putting your pants on one leg at a time and writing five-paragraph essays. While his days of steering students toward greatness are behind him, his lifelong desire to delight, entertain, and inform lives on in his work at How-To Geek.

If you're looking for him after hours, he's probably four search queries and twenty obscenities deep in a DIY project or entranced by the limitless exploration possibilities of some open-world game or another. He loves long walks on virtual

beaches, playing worker placement board games with inconsequential themes, and spending time with his family and menagerie of pets and plants.

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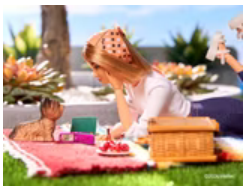

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